AP Statistics NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_DATE: \_\_\_\_\_\_\_\_\_

Ch. 17 Classwork

1. A scientist concerned with the deadly disease mycobacteriosis (found in rockfish in the Chesapeake Bay waters) knows that 19% of rockfish **have** the disease. Suppose a charter boat takes a group of amateur anglers out for a tour of the Chesapeake Bay. They catch 24 from different parts of the bay.
   1. Check to see if this is a Bernoulli trial (check the 4 conditions) (4 pts)
   2. What is the probability that none of the fish have the disease? (2)
   3. What is the probability that at least two have the disease? (2)
   4. What is the probability that no more than 3 have the disease? (2)
   5. What is the probability that less than 3 have the disease? (2)
   6. What is the probability that more than 5 have the disease? (2)
   7. What is the probability that ***between*** (not including) 10 and 15 fish have the disease? (4)
   8. What is the probability that between 13 and 18 (inclusive) fish have the disease? (4)
   9. How many fish should they expect to have the disease? (2)
   10. What is the standard deviation of the number of fish that have the disease? (2)
2. Willy Wonka is trying a new promotion to sell Wonka Bars. TO find the probability of getting a prize, we can look at the fact that out of a 200,000 Wonka Bars produced 12,000 randomly selected bars will have a prize that gives the owner a free box of Nerds.
   1. Check to see that this is a Bernoulli trial (4 pts)
   2. What is the probability that there isn’t a prize in 12 bars you eat? (3)
   3. What is the probability that in 8 bars there is 3 prizes? (3)
   4. What is the probability that there are at least 4 prizes out of 10 bars? (3)
   5. What is the probability that there is at least one prize in 12 bars? (3)
   6. If you were to buy a case of 250 Wonka bars, how many would you expect to have the prizes? With what standard deviation? (4)
   7. Can we use the Normal Approximation to the Binomial when we are sampling 250 bars? Justify. (2)
   8. What would be the model for a sample of 250 Wonka Bars? (1)
   9. Using this model, what would be the probability that of the 250 Wonka bars there would be less than 10 with prizes? (2)
   10. Using this model, what would be the probability that of the 250 Wonka bars there would be between 7 and 14 with prizes? (2)